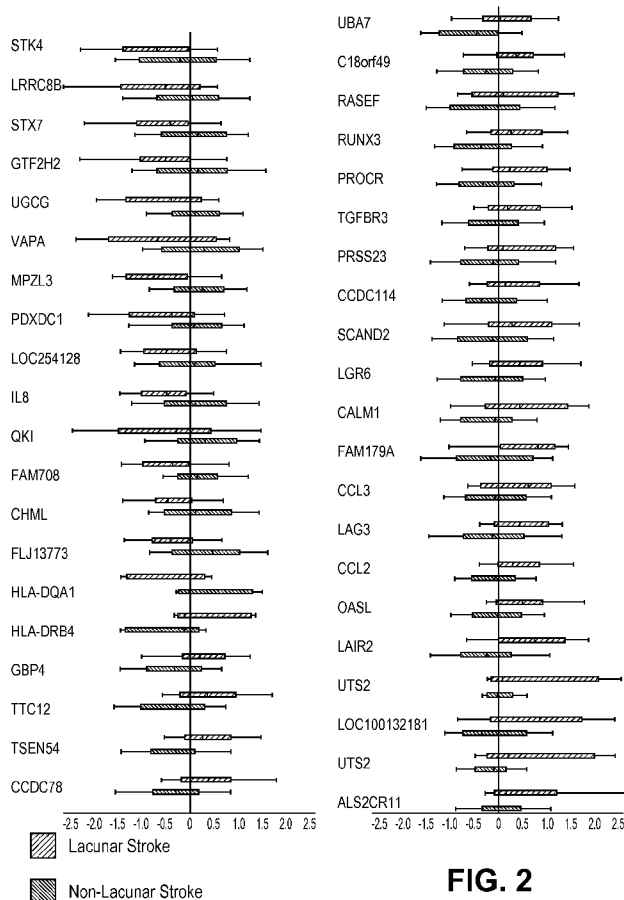




- (51) **International Patent Classification:**
C12Q 1/68 (2006.01) *G01N 33/53* (2006.01)
G01N 33/68 (2006.01)
- (21) **International Application Number:**
PCT/US2012/027316
- (22) **International Filing Date:**
1 March 2012 (01.03.2012)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/449,347 4 March 2011 (04.03.2011) US
- (71) **Applicant (for all designated States except US):** **THE REGENTS OF THE UNIVERSITY OF CALIFORNIA** [US/US]; 1111 Franklin Street, 12th Floor, Oakland, CA 94607-5200 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **SHARP, Frank** [US/US]; 1519 Rialto Lane, Davis, CA 95618 (US). **JICKLING, Glen, C.** [CA/US]; 1709 47th Street, Sacramento, CA 95819 (US).
- (74) **Agents:** **VILLENEUVE, Joseph, M.** et al.; Weaver Austin Villeneuve & Sampson LLP, P.O. Box 70250, Oakland, CA 94612-0250 (US).
- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO,

[Continued on next page]

(54) **Title:** BIOMARKERS FOR THE DIAGNOSIS OF LACUNAR STROKE



(57) **Abstract:** This invention provides gene expression profiles useful for diag lacunar stroke and for distinguishing lacunar stroke from non-lacunar stroke.



DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

- (84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT,

LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

- (88) **Date of publication of the international search report:**

27 December 2012

A. CLASSIFICATION OF SUBJECT MATTER*C12Q 1/68(2006.01)i, G01N 33/68(2006.01)i, G01N 33/53(2006.01)i*

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C12Q 1/68; G01N 33/53; C40B 30/04; C12M 1/34

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: Gene expression, lacunar stroke, HLA-DQA1, FLJ13773, RASEF, CALM1, QKI, TTC12, CCL3, CCL3L1, CCL3L3, CCDC78, PRSS23, LAIR2, C18orf49, MPZL3, UTS2, FAM70B, LOC254128, LGR6, IL8, CHML, STX7, PROCR, VAPA, TAG3, OAST, LOC100137181, HLA-DRB4, CCL2, UICG, PDXTD1, AT5?CR11, SCAND? GRP4, RINX3

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2010-0197518 A1 (XU, H. et al.) August 05 2010. See the whole document.	46-48
A	US 2003-0199000 A1 (VALKIRS, G. E. et al.) October 23 2003. See the whole document.	46-48
A	US 2007-0042425 A1 (HOCHSTRASSER, D. et al.) February 22 2007. See the whole document.	46-48
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Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

23 OCTOBER 2012 (23.10.2012)

Date of mailing of the international search report

24 OCTOBER 2012 (24.10.2012)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
189 Cheongsu-ro, Seo-gu, Daejeon Metropolitan
City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Kim, Jeong-Ah

Telephone No. 82-42-481-8747



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/027316

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/027316

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 1-45
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 1-45 pertain to a diagnostic method of lacunar stroke, thus relate to a subject matter which this International Searching Authority is not required, under Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the regulations under the PCT, to search.
2. ☒ Claims Nos.: 5, 14-18, 29, 37-41
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
Claims 5, 14, 17, 29, 37, 40 refer to claims which are not searchable due to not being drafted in accordance with the second and/or the third sentence of Rule 6.4(a).
Claim 15-16, 18, 38-39, 41 refer unsearchable claims 14, 17, 37, 40.
3. ☒ Claims Nos.: 4, 6-13, 19-22, 26-28, 30-36, 42-45, 49-52
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.